

**Unit 1: Alchemy**  
**Lessons 1-10 Test Review**

Name:

Date:

Pd:

In order to study for the test, you should:

- ✓ Review all classroom outlines for Lessons 1-10
- ✓ Review all vocabulary terms which are located at the end of each lesson in a list
- ✓ Look over all activity worksheets done for Lessons 1-10
- ✓ Read the lesson summaries found at the end of each lesson
- ✓ Review quizzes and homework assignments for Lessons 1-10

The test will be worth 100 points in Skyward. It will include both objective and free response portions. You must have a calculator for the test. If you are absent on the day of the exam, please be ready to take it immediately upon your return.

The following are some sample review questions for each lesson. This worksheet is a selected review for Lessons 1-10 and does NOT cover all material for the test. Also, be aware that you should review the concepts learned in these lessons but will also be required to apply this knowledge on the test.

**LESSON 1**

1. List 3 pieces of lab safety equipment in the classroom and their uses.

**Answers will vary: Possible answers include-**

- a) fire extinguisher, fire blanket for putting out fires
- b) fume hood: prevention of breathing dangerous gases
- c) broken glass container: proper disposal of broken glass
- d) safety shower: rinse extreme chemical splashes
- e) eye wash: flush out eyes in case of chemical splash

**etc.**

2. Sketch a picture and describe the use of:

a) flask

b) beaker

c) funnel



**flasks for containing liquids- good for swirling and combining chemicals**

**beakers for containing liquids; perform reactions in them**

**funnels for pouring liquids or separating solids/liquid mixtures with filter paper**

3. List 3 pieces of lab equipment that may be used for/while heating .

**bunsen burner, hot plate, wire gauze pad, ring stand, matches, hot hand, beaker tongs, etc**

## LESSON 2

4. in the Penny lab, how did we *prove* that the penny did not actually turn into gold?

**Density was used to prove that the material was not gold. The density of the penny did not match that of gold. Density is a property that may be used to identify a material**

## LESSON 3

5. List 3 examples of matter and 3 examples of things that are not matter.

**Answers may vary.**

**Matter examples: gases in air, water, desks, paper, etc.**

**Not matter: ideas, a shadow, electricity, electromagnetic radiation**

## LESSON 4

6. a) How is mass measured? What units are used for mass?

- b) How is volume measured? What units are used for volume?

**a) Mass is measured using a balance or scale. Some units of mass are gram(g), kilogram(kg), pound(lb), or ounce(oz). Scientific masses are reported in grams or kilograms.**

**b) Volume is measured by water displacement or by calculations using a geometric formula. Some units are milliliters(mL), liters(L), or any kind of cubic length such as centimeters cubed( $\text{cm}^3$ ) or inches cubed( $\text{in}^3$ ).**

7. a) A graduated cylinder contains 25.0 mL of water. A piece of metal is placed in the cylinder and the water level rises to 38.0 mL. What is the volume of the object in mL? In  $\text{cm}^3$ ?

- b) Calculate the volume of a rectangular object with the dimensions of 2.5 cm x 4.5 cm x 4.0 cm

$$\text{Volume} = 38.0 \text{ mL} - 25.0 \text{ mL} = 13 \text{ mL}$$

**13 mL is the same as  $13 \text{ cm}^3$**

$$\begin{aligned} V &= l \times w \times h \\ &= 2.5 \text{ cm} \times 4.5 \text{ cm} \times 4.0 \text{ cm} \\ &= 45 \text{ cm}^3 \end{aligned}$$

## LESSON 5

8. Calculate the density of an object with a mass of 5.4 g and a volume of 8.2 mL.

$$\text{Density} = \frac{\text{mass}}{\text{volume}} \quad d = \frac{5.4 \text{ g}}{8.2 \text{ mL}} = 0.66 \text{ g/mL}$$

9. What is the volume of an object with a density of  $9.0 \text{ g/cm}^3$  and a mass of 26.5 g?

$$\text{Density} = \frac{\text{mass}}{\text{volume}} \quad \text{so} \quad \text{Volume} = \frac{\text{mass}}{\text{density}} \quad \text{Volume} = \frac{26.5 \text{ g}}{9.0 \text{ g/cm}^3} = 2.94 \text{ cm}^3$$

10. Why is density an intensive property?

**An intensive property is one that does not depend on the size of the material, only the identity of the material. Due to this, they may be used to identify a material. Density is an example of an intensive property.**

## LESSON 6

11. What are the chemical symbols for aluminum, neon, and calcium?

**Al, Ne, Ca**

12. What are the chemical formulas for carbon dioxide and water?

**CO<sub>2</sub>, H<sub>2</sub>O**

13. What is the difference between LiCl(s) and LiCl(aq)?

**The first is the solid compound only. The second is the solid compound dissolved in water.**

## LESSON 7

14. List the copper compounds (names & formulas) formed in each step of the copper cycle:

a) Solid copper powder was obtained: **copper solid, Cu(s)**

b) Nitric acid, HNO<sub>3</sub>(aq), was added: **copper nitrate, Cu(NO<sub>3</sub>)<sub>2</sub>(aq)**

c) Sodium hydroxide, NaOH(aq), was added: **copper hydroxide, Cu(OH)<sub>2</sub>(aq)**

d) The solution was heated and filtered: **copper oxide, CuO(s)**

e) Sulfuric acid, H<sub>2</sub>SO<sub>4</sub>(aq), was added: **copper sulfate, CuSO<sub>4</sub>(aq)**

15. What are some observations that indicate that a chemical change has occurred?

**bubbling, color change, formation of precipitate, gas formed, heat released**

16. Why is adding nitric acid to copper a chemical reaction but water melting is not?

**Adding nitric acid to copper with result in new chemical compounds being formed. Melting water is just a physical change that only changes the state of the water from solid to liquid – but it's still H<sub>2</sub>O and does not change the chemical composition**

## LESSON 8

17. How did the copper cycle lab show the law of conservation of matter?

**The copper was used in Step 1 of the lab and reappeared at solid copper at the end of the lab. It was present in each step of the lab and was never destroyed.**

## LESSON 9

18. How did Mendeleev organize his periodic table?

**He organized his periodic table by increasing atomic mass. He also used the chemical and physical properties to organize the elements into groups such as reactivity and the formulas of compounds each element formed.**

19. What is reactivity?

**This is a property that describes how readily something will react with another substance**

20. Given the following example compounds, predict the formula for the compound containing Li and O. Explain.

*given formulas:* LiCl, K<sub>2</sub>S, NaCl, Rb<sub>2</sub>O

**Li and O will form Li<sub>2</sub>O because that is the ratio in which Rb and O combine. Li and Rb are in the same group and thus have similar properties.**

## LESSON 10

21. Where are the most reactive elements on the periodic table?

**Most reactive elements are in the lower left and upper right portions of the table.**

22. What is the main difference between the organization of the modern periodic table and Mendeleev's periodic table?

**Mendeleev organized his elements by increasing atomic weight whereas the modern table is organized by increasing atomic #.**

23. What are the names of Groups 1, 2, 17, and 18, respectively?

**alkali metals, alkaline earth metals, halogens, noble gases**

24. Where are the transition elements?

**They are in the middle of the periodic table in Groups 3 through 12.**